

SECTION 3 TRANSPORTATION OF HAZARDOUS MATERIALS AND WASTE

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Synopsis

NOTE: The purpose of this section is to provide information regarding the application of the Department of Transportation (DOT) regulations to hazardous materials transported by or offered by NWS personnel. The section applies to all NWS facilities, work sites, and employees.

Initial Implementation Requirements:

- Appoint a Designated Person to coordinate hazardous material transportation (3.6)
- Identify Scope of Applicability at Site/Facility Operations with the Requirements of this Section
 - Identify all hazardous materials transported by NWS employees (3.6)
 - Identify all hazardous materials and wastes transported by a contracted service provider (3.6)
 - Prepare a “short list” of site-specific hazardous material and hazardous waste shipping descriptions using 3.7.2 and 3.11

Recurring and Annual Task Requirements:

- Meet with Transporter to Identify and Verify Shipping Descriptions, Labeling and Marking to be used on Containers and Shipping Documents during Length of Contract.
- Periodically (at least semi-annually), Inventory Types and Quantities of Hazardous Materials Transported Off-site by NWS Personnel for Use at Remote Work Locations (3.6)
- Train Affected Personnel in Their Role of Ensuring Compliance with DOT and EPA Transportation Requirements (3.6, 3.10 and Section 17.6.14)
- Inspect Labeling, Marking and Paperwork Prepared by Transportation Service Provider Prior to Signing Shipping Document and Releasing Hazardous Materials/Hazardous Waste for Transportation (3.6)
- Ensure Signed Copy of Hazardous Waste Manifest is Returned From the Treatment, Storage and Disposal Facility (TSDF) Within 45-Days

Transportation of Hazardous Materials and Waste Checklist		YES	NO	NA
1.	Has the work site identified all the hazardous materials regulated by the U.S. Department of Transportation (DOT) that are transported by NWS employees? (3.6)	—	—	—
2.	Have all NWS employees who transport these hazardous materials received instruction on proper labeling and marking as well as methods to secure these materials during transport? (3.6, 3.10 and Section 7.6.14)	—	—	—
3.	Have all DOT hazardous materials that are transported from the facility or work site by a contracted hauler been identified? (3.6) 4.	—	—	—
4.	Has a listing been prepared for each DOT hazardous material identifying the material, its proper shipping name, the appropriate markings, and allowable shipping containers to be used?	—	—	—

SECTION 3 - TRANSPORTATION OF HAZARDOUS MATERIALS AND WASTE

3.1 Purpose and Scope

National Weather Service (NWS) operations utilize many different hazardous materials, both at NWS facilities and/or at remote locations. Because these materials are transported by NWS personnel when specific maintenance activities are undertaken, the Department of Transportation (DOT) Hazardous Material Regulations (HMR) must be considered to assure safe transport. This section addresses the application of these rules to NWS facilities and personnel and provides specific guidance for typically transported hazardous materials.

3.2 Definitions

Labeling	The application of hazard warning labels as prescribed in the Hazardous Materials Table.
Marking	The descriptive name, instructions and cautions designated for a hazardous material in 49 CFR 172.300. Marking includes the proper shipping name, the identification number, other regulated material (ORM) designations, internal packaging, and specific requirements for various types of tanks.
Placarding	The application of DOT-designed hazard warning sign(s) to the outside of the shipping vehicle.
Station Manager	For the purpose of this procedure, the Station Manager shall be either the NWS Regional Director; NCEP Director; Directors of Centers under NCEP (Aviation Weather Center, NP6; Storm Prediction Center, NP7; Tropical Prediction Center, NP8, and Space Weather Prediction Center, NP9); Directors of the NDBC, NWSTC, and Chiefs of NRC, ROC and SFSC facilities; or Meteorologist in Charge (MIC), Hydrologist in Charge (HIC), or Official in Charge (OIC).

3.3 Acronyms Employed in This Section

ASOS	Automated Surface Observation System
CERCLA	Comprehensive Environmental Response and Compensation Liability Act
CFR	Code of Federal Regulations
CHEMTEC	Chemical Manufacturers Transportation Emergency Center
CONUS	Continental United States
COTR	Contracting Officer's Technical Representative
DOT	Department of Transportation
EPA	Environmental Protection Agency
ERG	Emergency Response Guidebook
HM	Hazardous Material
HMR	Hazardous Materials Regulations

HMT	Hazardous Materials Table
HMTA	Hazardous Materials Transportation Act
HMTUSA	Hazardous Materials Transportation Uniform Safety Act
LARC	Limited Access Remote Collector
MCE	Mercury Containing Equipment
NOAA	National Oceanic & Atmospheric Administration
n.o.s.	not otherwise specified
N/A	Not Applicable
NWS	National Weather Service
NWSH	National Weather Service Headquarters
ORM	Other Regulated Material
PG	Packaging Group
RCRA	Resource Conservation and Recovery Act
RDA	Radar Data Acquisition
RQ	Reportable Quantity
SECO	NOAA Safety and Environmental Compliance Office
TSDF	Treatment, Storage, and Disposal Facility
UN/NA	United Nations/North American (numbering system)

3.4 Regulatory Requirements

3.4.1 Federal Legislation

- a. The Hazardous Materials Transportation Act (HMTA) of 1974 required the Department of Transportation (DOT) to identify hazardous materials, which would pose a danger to health and safety while in transit, and to specify identification, labeling, packaging and placarding requirements as a means of managing these hazards during transportation. The Hazardous Material Regulations (HMR) are found in 49 CFR Parts 171-180.
- b. The Hazardous Materials Transportation Uniform Safety Act (HMTUSA) of 1990 amends the HMTA with additional requirements.
- c. The Resource Conservation and Recovery Act (RCRA) regulates the storage, transportation, and disposal of hazardous waste. While maintaining specific requirements for waste transporters, the Environmental Protection Agency (EPA) expressly adopts the DOT regulations for the transportation of hazardous waste. These regulations specify the requirements for labeling, marking, placarding, use of proper containers, and reporting of discharges. The adoption of the DOT rules to hazardous waste shipments ensures consistency and avoids duplication of conflicting transportation requirements. Both EPA and DOT have enforcement authority over hazardous waste shipments regardless of the other agency's enforcement action (or inaction).

3.5 Application to the NWS

3.5.1 Exemption for Federal Government

The HMTA and HMTUSA apply to “any person” who transports hazardous materials in commerce. The NWS, as an organization within the Federal Government, is included as a “person” and thereby subject to the HMR. However, the action of “transporting in commerce” does not apply to the NWS. According to a clarification letter issued by the DOT, “in commerce” means to “further a commercial enterprise” and that enterprise is “in competition with the private sector.” The DOT has given the opinion that transportation undertaken by the Government is not to further a commercial enterprise specifically when it is carried out by government personnel (in government vehicles) and is intended for a governmental purpose.

3.5.2 How does this affect the NWS?

- a. The HMR *do not* apply to the transportation of operationally necessary hazardous materials from NWS facilities transported in government vehicles, by NWS employees to NWS remote work sites/locations.
- b. The HMR *do not* apply to the transportation of operationally necessary hazardous materials and hazardous waste used and/or generated at the remote work site/locations for transport back to a NWS facility as long as it is undertaken by NWS personnel using a government vehicle.
- c. The HMR *do apply* to any entity *contracted* by NWS personnel to transport a hazardous material or waste either to or from a NWS facility or remote work site/location.

NOTE: In this circumstance, it is the use of the contractor’s employees and/or its vehicle (i.e. including vessel and aircraft) that defines the transport as “furthering a commercial enterprise.” This transport is not covered as a governmental activity and the transporter must comply with the HMR.

- d. The HMR *do apply* to the transportation of hazardous waste to a treatment, storage or disposal facility by NWS personnel, using a government or private vehicle. According to the Environmental Protection Agency (EPA) regulations for hazardous waste in 40 CFR Parts 262 (Standards Applicable to Generators) and 263 (Standards Applicable to Transporters) HW transporters must have an EPA Identification Number. Because it is not in the mission of the NWS scope of responsibilities to transport hazardous waste and due to the legal consequences potentially associated with this activity, the transportation of hazardous wastes to permitted treatment and disposal facilities by NWS personnel is prohibited.

NOTE: With the growing awareness of the hazardous nature of the garbage being disposed in local garbage landfills, many communities have set-up periodic “household hazardous waste” collection days to segregate and/or recycle certain types of waste. Depending upon the requirements established by the community, NWS facilities *may* be able to participate. Before transporting *any* waste generated at an NWS facility or work location, contact the local program officials to determine whether the NWS facility, as a Federal government activity and generator of hazardous waste, can participate and if there are any special requirements regarding the transportation of the waste to the collection site (needed documents, permits, etc.).

- e. The HMR *may* apply to the transportation of computer central processing units (CPUs) and cathode ray tubes (CRTs) or monitors. Currently the EPA regulates them as hazardous wastes and hence they can only be transported by a registered hauler. Because the EPA is proposing to regulate these as universal wastes, as some States currently are doing, they are regulated under the DOT rules. Some States are regulating them as controlled scrap metal for recycling and as a result, requiring a registered hauler be used.
- f. The HMR are issued for the safe transportation of hazardous materials in intrastate, interstate and foreign commerce with applicability in the United States, District of Columbia, Commonwealth of Puerto Rico, the Commonwealth of the Northern Mariana Islands, the Virgin Islands, American Samoa, Guam and any other possession so designated.

This means that NWS facilities and work locations in any of these foreign countries must apply the same interpretation of “government activity versus furthering a commercial enterprise” when transporting hazardous materials and/or waste. It is NWS policy that all NWS activities including facilities in other than the Continental United States (CONUS) locations ensure, to the best of their ability that contracted transportation services comply with all applicable HMR. Consult with the NWS Regional Environmental/Safety Coordinator or NOAA SECO for additional advice.

- g. Although the DOT does not regulate the transportation of Hazardous Materials when done by NWS employees in a NWS (or government vehicle) for a governmental purpose, the NWS recognizes the DOT rules are designed to facilitate the safe transport of these materials. To ensure employee safety and facilitate appropriate response in the event of an accident, NWS policy requires NWS personnel to apply the DOT rules for packaging, labeling and marking of containers. Although this policy does not require the use of DOT shipping papers, a list of hazardous materials and the quantity being transported shall accompany the material transport. Furthermore, it is recommended that MSDSs for transported hazardous materials are available for use in case of emergency.

3.6 NWS Implementation

The first task is to assign a Designated Person to coordinate the hazardous materials transportation effort. This role is normally tasked to the Environmental Focal Point, but may be assigned to another NWS employee. To help coordinate the implementation at NWS work sites, an inventory must be taken to identify all hazardous materials transported by NWS employees. Additionally, another inventory will be generated of all hazardous materials and wastes

transported by contracted service providers. These inventories will help identify the level of effort necessary and additional site personnel requiring training.

The DOT regulations affect any person who offers a hazardous material for transportation, each carrier who transports a hazardous material and anyone else who performs a packaging, labeling or marking function.

Typically, contractors are used by the NWS to either deliver needed hazardous materials or to pick up waste for disposal or recycling. As a result, the involvement of NWS employees with the DOT rules can appear minimal because the contractor usually “prepares” the shipping document/manifest, ensures proper packaging are used and even attaches DOT labels.

But, because the DOT identifies the “offeror,” the “transporter” and “others” whose role can affect the transported material, the NWS and its employees at most locations are still bound by these rules.

The Environmental Focal Point or Designated Person must ensure that all work performed by the contracted provider be checked periodically to ensure compliance with applicable rules because by signing the prepared shipping paper, the NWS representative is certifying that the shipment has been prepared in accordance with the DOT rules and as a result, the NWS assumes liability for compliance.

3.6.1 Contract Language

When using a contractor to transport, treat, or dispose of a hazardous waste, the NWS does not transfer legal liability for improper management with the physical transfer of the waste. The NWS remains liable long after the waste is gone. As a result, all new and existing contracts must be carefully scrutinized to maintain minimum liability for the NWS and its employees. All contracts must be reviewed to assure that the contract clearly mandates that the contractor comply with the law. With the assistance of the Contracting Officer’s Technical Representative (COTR), review all existing contracts to ensure they include a phrase mandating the contractor to “comply with all applicable Federal, State, and local laws pertaining to the proper transportation, management, and disposal of wastes and materials.”

3.6.2 Review of the Transportation Contractor (Hauler)

Before using the services of a transportation contractor, contact the NWS Regional Environmental/Safety Coordinator or NOAA SECO to determine if the hauler is registered to transport hazardous materials and/or waste and to determine the hauler’s compliance history.

Also, determine if there are pending citations or other legal sanctions for improper or illegal transportation practices by the hauler. If so, how have these been resolved? What is the current enforcement status of the hauler?

In addition, in the investigatory interview, a determination must be made as to whether the hauler has sufficient resources and/or the necessary insurance to protect the NWS from unexpected liabilities if accidents or mishandling occurs during transportation. Again, the COTR can provide assistance in this effort.

3.7 Transportation of Hazardous Materials

3.7.1 Hazardous Material Table

The DOT designates materials as hazardous by listing them upon the Hazardous Materials Table (HMT). The HMT is an alphabetical list of commodities or items that identifies:

- a. The material's hazard class or that the material is forbidden in transportation
- b. The proper shipping name or direction to the preferred proper shipping name
- c. Specific (or references to) requirements in the HMR pertaining to labeling, packaging, quantity limits aboard aircraft and stowage of hazardous materials aboard vessels.

The HMT consists of ten (10) columns of information that is used to fulfill the requirements for a given shipment. The HMT is found in [49 CFR 172.101](#). Due to its length and on-going potential for revision, reference a current copy at [DOT HMT](#).

Appendix A to the HMT is the List of Hazardous Substances and Reportable Quantities. The Appendix lists materials and their corresponding reportable quantities (RQs) that are designated as "hazardous substances" by CERCLA. It is used to determine the need for additional information to be provided on shipping documents and containers. Because the EPA has the legal responsibility to determine the reportable quantities for the DOT, these RQs can be found in Appendix B to this manual.

3.7.2 Shipping Papers

Anyone who offers a hazardous material for transportation is required to describe the material on a shipping paper as specified in [49 CFR 172.200-204](#). This document accompanies the shipment to its destination and serves as a record of the shipment, the transporter used and final disposition of the hazardous materials shipped from NWS facilities and work locations.

- a. General Entries

While non-regulated items may be included on the same shipping paper as regulated hazardous materials, the hazardous material entries must be identified as denoted in §172.201(a)(1).

- b. Contents

- 1) All copies of shipping papers must be legible and printed (mechanically or manually) in English.
- 2) Unless allowed, no abbreviations may be used in the description.
- 3) Additional information about the material may be added, but it must be placed after the "basic description."
- 4) If more than one sheet is necessary, ensure that it is sequentially numbered indicating the number of pages (i.e., 1 of 4 pages).

- c. Emergency Response Telephone Number

A 24-hour emergency response telephone number for use in the event of an emergency involving the shipped hazardous material must be provided on the shipping paper. The number must have immediate access to a person who is knowledgeable of the material and emergency response mitigation information for the material (**Note:** DOT shipping

papers are not required for transportation of hazardous materials in government vehicles. However, a list of hazardous materials and the quantity being transported shall accompany the material transport. Furthermore, it is recommended that MSDSs for transported hazardous materials are available for use in case of emergency).

d. Description of Hazardous Material on Shipping Papers

The “shipping description” of a hazardous material on shipping papers must include the following items in the following order:

- 1) The proper shipping name as prescribed in column 2 of the HMT
- 2) The hazard class or division prescribed in column 3 of the HMT
- 3) The identification number prescribed in column 4 of the HMT
- 4) The packaging group in roman numerals prescribed (if any) in column 5 of the HMT, preceded by “PG”
- 5) The total quantity, by net or gross mass, capacity or other appropriate units (use of abbreviations is allowed).

As an example, the proper shipping description for 25-gallons of gasoline would be: “Gasoline, 3, UN 1203, PG II, 25 gals.”

e. Additional Description Requirements

The following additional requirements found in 49 CFR 172.203 may apply when describing a hazardous material.

- 1) Exemptions - when a shipment is made under an exemption, it must bear the notation “DOT-E” followed by the exemption number.
- 2) Limited Quantities - if an item meets the requirements for a limited quantity, the words “Limited Quantity” or “Ltd Qty” must follow the basic description.
- 3) Hazardous Substances - if a hazardous substance description does not identify the substance by name (i.e. flammable liquid, not otherwise specified (n.o.s.)), the name of the hazardous substance will be entered in parentheses in association with the basic description.
 - a) For mixtures of hazardous materials containing two or more hazardous substances, the name of the two hazardous substances with the lowest RQs must be identified.
 - b) For hazardous waste streams, the waste code (e.g. D001) may be used to identify the waste.

The letters “RQ” (for reportable quantity) must be noted before or after the basic description if the material/waste is listed on Appendix A to the HMT and the quantity in an individual package contains an amount equal to or greater than the RQ listed for the material.

- 4) Radioactive material - additional notations are required in 49 CFR 172.203(d).

- 5) Empty packaging - a description for a packaging containing the residue of a hazardous material may include "Residue: Last Contained" in association with the basic description of the hazardous material last contained in the package.
- 6) Transport by air - additional notations as required by 49 CFR 172.203(f).
- 7) Transport by rail - additional notations as required by 49 CFR 172.203(g).
- 8) Transport by highway - additional notations as required by 49 CFR 172.203(h) for shipments of anhydrous ammonia and liquefied petroleum gas.
- 9) Transport by water - additional notations as required by 49 CFR 172.203(i).
- 10) Technical names for not otherwise specified or "n.o.s." descriptions - if one of the proper shipping names shown on the HMT with a "G" in column 1 is utilized, the technical name of the hazardous material must be entered in parentheses in association with the basic description (i.e. Corrosive liquid, n.o.s., (sodium hydroxide) 8, UN 1760, PG II).
- 11) Marine pollutants listed on Appendix B to the HMT have special considerations. Where the proper shipping name does not identify by name the component that makes the material a marine pollutant, the name of the marine pollutant must be entered in parentheses in association to the basic description. If a mixture contains two or more marine pollutants, the names of at least two most predominately contributing to the marine pollutant designation must appear in parentheses.
 - a) The words "Marine Pollutant" shall be designated in association to the basic description that is a marine pollutant.
 - b) Except for transport by vessel, this requirement does not apply to oil (as designated in 49 CFR 130) as long as the proper shipping name identifies the material as such.
- 12) Poisonous material - regardless of the hazard class to which a material is assigned, the following requirements apply to poisonous materials:
 - a) If a Division 6.1, PG I or II solid or liquid material whose shipping name or class does not disclose that it is a poison, the words "Poison" or "Toxic" must be entered on the shipping paper in association with the description.
 - b) Materials poisonous by inhalation must be marked "Poison-Inhalation Hazard" or "Toxic Inhalation Hazard." Additionally, if a gas, "Zone A, or B, or C, or D" shall be entered following the shipping description. If a liquid, "Zone A or B" as appropriate.
- 13) Elevated temperature materials - the word "HOT" must be noted preceding the proper shipping name if a liquid material meets the definition in §171.8.
- 14) Organic peroxides (Class 5.2) and self-reactive (Class 4.1) materials must include additional information as required by 49 CFR 172.203(o).
- f. Each shipping document must contain a certification as specified in 49 CFR 172.204 to assure that the described materials have in all respects met the applicable requirements

of the DOT. Additional certification requirements are specified for transport by cargo and passenger aircraft and for radioactive materials.

3.7.3 Marking and Labeling

When a material is offered for shipment, each container must be properly marked and labeled. While one often assumes these terms have the same meaning, the DOT specifies two distinct regulatory programs to accomplish the identification of hazardous materials.

Marking is defined by the DOT as the application of the descriptive name, instructions and cautions designated in 49 CFR 172.300. Marking includes the proper shipping name, the identification number, ORM designations, internal packaging, and specific requirements for portable tanks, cargo tanks, tank cars, and radioactive materials. This information may be applied directly to the container with paint, marker, etc. or on an adhesive-backed sticker.

Labeling requirements are found in 49 CFR 172.400 and specify the application of hazard warning labels prescribed in the HMT. Additional labeling requirements are specified for radioactive materials and multiple hazard materials and packaging.

In general, labeling is the application of the DOT hazard warning labels specified in the HMT and marking is the application of other required information on the container.

NOTE: Appendix D to this Manual is a freeware program entitled “Hazardous Waste Labels.” This is a WORD document, which can be used to print many of the markings and labels required for typical wastes generated by the NWS.

a. Marking

Anyone who offers a hazardous material for transport must mark each package, freight container and transport vehicle containing a hazardous material according to 49 CFR 172 Parts 300-338.

The following summary identifies selected markings for hazardous materials in non-bulk packaging:

- 1) The proper shipping name as it appears in the DOT HMT column 2 (49 CFR 172.301).
- 2) The identification number as it appears in column 4 of the DOT HMT. The number is not required on packages of “limited quantities” or ORM-D material.
- 3) The proper shipping name for a hazardous waste is not required to include the word “waste” if the package bears the EPA marking as required by 40 CFR 262.32.
- 4) The technical chemical name of the hazardous material or substance must be marked in parentheses if column 1 of the HMT indicates a “G”, and/or the selected shipping name does not otherwise identify the chemical/material (49 CFR 172.301 and 172.324).
- 5) Packages containing inner containers of liquid hazardous material must be marked with the “this end up” arrow designation. There are numerous exceptions to this requirement (see 49 CFR 172.312).
- 6) The words “Inhalation Hazard” must be marked on packages of poisonous inhalation

materials (49 CFR 172.313).

- 7) Materials classified as a consumer commodity must be marked ORM-D or ORM-D-Air if being transported by air (49 CFR 172.316).
- 8) Marine pollutants shipped by vessel and/or in bulk quantities must be marked as specified (49 CFR 172.322).
- 9) The letters "RQ" (for reportable quantity) must be displayed in association with the proper shipping description for each package containing the reportable quantity of a hazardous substance (49 CFR 172.313).

The required markings must be:

- Durable
- In English
- Printed or affixed to the surface of a package or a label, tag or sign
- Displayed on a background of a contrasting color
- Unobstructed by labels or attachments
- Located away from any other marking (i.e. advertising) that could substantially reduce its effectiveness.

b. Labeling

Each person who offers for transport or transports a hazardous material in a non-bulk package, a bulk packaging or over pack with a capacity less than 640 cubic feet or portable tank with a capacity of less than 1,000 gallons must label the hazardous material as required in column 6 of the HMT. Labeling requirements are found in 49 CFR 172 Parts 400-450.

The following summary identifies selected labeling requirements.

- 1) Packages must be labeled with the proper DOT label as shown in column 6 of the HMT (49 CFR 172.400).
- 2) Subsidiary Hazard Labels. Some substances have more than one hazardous characteristic. The DOT regulations require that some of these materials be labeled with more than one label to reflect the additional hazard. Column 6 specifies the required labels (49 CFR 172.402).
- 3) Radioactive materials that also meet the definition of one or more additional hazards must be labeled as radioactive material as well as for each additional hazard (49 CFR 172.403).
- 4) Mixed Packaging. When hazardous materials having different hazard classes are packed in the same container or overpack, the outside packaging must be labeled for each hazard class of the hazardous material in the container (49 CFR 172.404).
- 5) Consolidated Packaging. When two or more packages containing compatible HM are placed within the same outside container or overpack, the outside container or overpack must be labeled for each hazard class of the HM contained therein (49 CFR 172.404).

- 6) Labels may not be modified unless authorized in 49 CFR 172.405.
- 7) Labels must be printed on or affixed to the surface of the package near the proper shipping name (49 CFR 172.406).
- 8) DOT labels must meet the criteria listed in 49 CFR 172.407.
- 9) The word “toxic” can be used in lieu of the word “poison” on the Poison label.
- 10) Labeling exemptions exist for numerous materials and packages.
See 49 CFR 172.400a.

Labels must be:

- a) Printed or affixed to a surface (other than the bottom) of the package
- b) Placed near the proper shipping name marking
- c) When a subsidiary label or multiple labels are required, it must be placed within 6-inches of the primary hazard label
- d) Clearly visible and may not be obscured by markings.

3.7.4 Placarding

The DOT regulations require placarding of shipments of hazardous materials depending on the hazard class and quantity. Hazardous material placards look very much like hazardous material warning labels in terms of shape, color, and design. Placards are used to alert people of the potential dangers associated with the type of hazardous material being transported in a motor vehicle, railcar, freight container, cargo tank, or portable tank. They also guide emergency personnel in their response to spills or accidents involving the hazardous material.

- a. Each person who offers for transportation or transports any hazardous material must utilize the appropriate placards. 40 CFR 262.33 requires a generator of hazardous waste to placard or offer the initial transporter the appropriate placards.
- b. A hazardous material must be placarded as specified in Tables 1 and 2 of 49 CFR 172.504.
 - 1) Table 1 - Hazard classes identified on Table 1 are required to be placarded whenever any quantity is transported. While contract haulers normally have the placards for the transport vehicle, the NWS must ensure the correct placard is used.
 - 2) Table 2 - Hazard classes identified on Table 2 are exempted from placarding requirements when less than 454 kg (1,001 pounds) aggregate gross weight of hazardous material are being transported.
- c. Dangerous placard. When a transport vehicle (et.al.) contains non-bulk packages with two or more different hazard categories of materials that would otherwise require different placards specified in Table 2, the “Dangerous” placard may be applied instead of the hazard-specific placards. If any hazard class category exceeds 1,000 kg (2,205 pounds) aggregate gross weight (loaded at one facility), then the individual placard for the hazard category must be applied.
- d. Exception for less than 454 kg (1,001 pounds). When non-bulk packages that contain less than 454 kg (1,001 pounds) aggregate gross weight of HM covered in Table 2 are transported by highway, no placard is required.

- e. Hazardous material placards must be displayed on each end and each side of a motor vehicle or other transport vehicle and be readily visible.
- f. Placarding requirements may vary according to the mode of transport (highway, rail, water, air) and the type of transport vehicle or container.
- g. Hazardous materials that possess a subsidiary hazard as described in 49 CFR 172.505 must apply additional placarding to the vehicle.
- h. Placarding exceptions are specified in 49 CFR 172.504(d) (f).

Table 1. Placarding Requirements by Category	
Category of material (Hazard class or division number and additional description, as appropriate)	Placard name
1.1	EXPLOSIVES 1.1
1.2	EXPLOSIVES 1.2
1.3	EXPLOSIVES 1.3
2.3	POISON GAS
4.3	DANGEROUS WHEN WET
5.2 (Organic peroxide, Type B, liquid or solid, temperature controlled)	ORGANIC PEROXIDE
6.1 (inhalation hazard, Zone A or B)	POISON INHALATION HAZARD
7 (Radioactive Yellow III label only)	RADIOACTIVE ¹
Table 2. Placarding Requirements by Category	
Category of material (Hazard class or division number and additional description, as appropriate)	Placard name
1.4	EXPLOSIVES 1.4
1.5	EXPLOSIVES 1.5
1.6	EXPLOSIVES 1.6
2.1	FLAMMABLE GAS
2.2	NON-FLAMMABLE GAS
3	FLAMMABLE
Combustible liquid	COMBUSTIBLE
4.1	FLAMMABLE SOLID
4.2	SPONTANEOUSLY COMBUSTIBLE
5.1	OXIDIZER
5.2 (Other than organic peroxide, Type B, liquid or solid, temperature controlled)	ORGANIC PEROXIDE

¹ RADIOACTIVE placard also required for exclusive use shipments of low specific activity material and surface contaminated objects transported in accordance with §173.427(a) of this sub chapter.

6.1 (inhalation hazard, Zone A or B)	POISON
6.2	(None)
8	CORROSIVE
9	CLASS 9 [SEE §172.504(f)(9)]
ORM-D	(None)

3.8 Transportation of Hazardous Waste

The EPA mandates the requirements for generators of hazardous waste in 40 CFR 262. When a generator transports or offers for transportation a hazardous waste, the EPA specifies a number of requirements to be fulfilled in order to ensure appropriate management and protection of health, safety and the environment.

3.8.1 Hazardous Waste Manifest

The key to the RCRA Hazardous Waste Management Program is the use of the manifest. This document is designed to record the movement of hazardous waste from the generator through the transporter(s) and any intermediate storage sites, to the site where it is to be treated or disposed.

a. General Requirements

The manifest must be prepared by the generator prior to transporting the waste off-site. Since the generator must designate on the manifest the permitted facility to which the waste is to be delivered, prior contact with the treatment, storage, and disposal facility (TSDF) will be required in most cases. The generator can also specify an alternate TSDF to which the transporter can deliver the waste in case of an emergency.

If, for some reason, the transporter is unable to deliver the hazardous waste to either the designated or alternate facility, the transporter must contact the generator. The generator, in turn, must either designate another facility or instruct the transporter to return the waste.

Under this system, the transporter can only deliver the waste where the generator has instructed.

b. Information Required on the Manifest

Due to an overhaul of the manifest program (40 CFR 262.23 and 40 CFR 262 Appendix) which occurred on September 5, 2006 (40 CFR 262- 263) the manifest has been standardized and all State-modified manifests have been eliminated.

The EPA specifies that the manifest contain the following information:

- 1) A manifest document number preprinted by the printer.
- 2) The name, address, telephone number, and EPA or State identification number of the generator.
- 3) The Emergency Response phone number for the generator - only if one number is applicable to the entire shipment. If different for specific materials, the number is entered after each DOT description.
- 4) The name and EPA identification number of each transporter. If more than two, use the Manifest Continuation Sheet to document.

- 5) The name, address, and EPA identification number of the designated TSDF and the alternate, if any.
- 6) The DOT description (including proper shipping name, hazard class or division, identification number and packing group) as per 49 CFR 172.
- 7) The number and type of containers for each waste.
- 8) The total quantity of waste with units indicated.
- 9) The waste code or codes applicable to the waste.
- 10) The signature of the Generator/Offeror to certify that the shipment is properly prepared and in proper condition for transport. In addition, the generator is certifying the waste minimization certification.

The generator's certification is found in 40 CFR 262.27 and reads:

"I am a large quantity generator. I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage or disposal currently available to me which minimizes the present and future threat to human health and the environment"

OR,

"I am a small quantity generator. I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford."

By signing this document, generators of over 1,000 kg/month affirm that they have a program of waste minimization in place. Generators of between 100 and 1,000 kg/month merely affirm that they have made a "good faith effort" to minimize their waste generation. The EPA clarified this "good faith effort" to mean that these generators need only "consider" the waste minimization options available to them.

Although small quantity and conditionally exempt small quantity generators are not legally bound by this statement, when signing the manifest, best management practices require they also comply with these conditions.

When a party other than the generator prepares the shipment for transportation, this party may also sign the shipper's certification statement as the offeror of the shipment.

The words "On behalf of" in the signature block (handwritten or preprinted) indicate that the individual signs as the employee or agent of the named principal.

c. Obtaining the Manifest.

To ensure standardization and consistency of the printed manifest, the EPA has established a "*Manifest Registry*" to provide oversight for the document.

Anyone (i.e., businesses, individuals, or agencies) wishing to print the manifest must secure EPA approval. Registrants submitting an application and form samples for EPA evaluation must obtain EPA approval prior to distribution and/or use.

A generator must obtain and use a manifest that has been procured from an approved, registered printer.

A table of “*Approved Registered Printers for the Manifest*” can be found at <http://www.epa.gov/epawaste/hazard/transportation/manifest/registry/printers.htm>

d. Number of Copies

The manifest is designed to provide enough copies so that the generator, each transporter, and the TSDf will each have one copy with an additional copy to be returned to the generator by the TSDf. This usually means at least a 4-part form is required. If more than one transporter is used, the number of copies must increase accordingly.

Some State agencies also require copies of the manifest - potentially two copies for the generator’s State agency and the disposer’s State agency.

e. Use of the Manifest

During its use, the uniform manifest must accompany the waste shipment from the generator, through each transporter to the designated TSDf.

The generator:

- 1) Signs the manifest
- 2) Has the transporter sign and date upon pickup of the hazardous waste
- 3) Removes one copy for his records
- 4) Gives the remaining copies to the next transporter or the designated facility.
- 5) When the signed copy is returned by the designated facility, it can be added with or replace the original copy signed only by the generator and transporter.

The transporter will then:

- 1) Have either the next transporter or the designated facility (whichever is applicable) sign and date the manifest upon receipt of the waste shipment
- 2) Retain a copy for his or her records
- 3) Give the remaining copies to the next transporter or the designated facility.

The designated facility will:

- 1) Retain a copy of the manifest for its records
- 2) Return a copy of the completed, signed manifest to the generator to acknowledge receipt of the shipment.

For shipments within the United States that are solely by rail or bulk shipments solely by water, the generator sends three copies of the manifest directly to the TSDf. Copies of the manifest are not required for each transporter for these shipments.

States that have their own state-modified uniform manifest may require a slightly different procedure. Before shipping, check with the appropriate regulatory agencies.

f. Pre-Transport Requirements

Before a shipment of hazardous waste is transported off-site, the EPA requires the generator to comply with the DOT regulations regarding packaging, labeling, marking and placarding (as specified in 3.7 - Transportation of Hazardous Materials).

- 1) Packaging - all packaging used for off-site shipment of hazardous wastes must conform to the DOT regulations found in 49 CFR 173, 178 and 179.
- 2) Labeling - each package of hazardous waste must be labeled in accordance with DOT regulations for hazardous materials under 49 CFR 172 (i.e. flammable gas, oxidizer, corrosive material, etc.).
- 3) Marking - each package of hazardous waste must be marked in accordance with the DOT regulations for hazardous materials under 40 CFR 172. At a minimum, the proper DOT shipping name (which includes the hazard class and UN/NA number) must be clearly marked on each container. In addition, the EPA requires that each container under 119-gallons in capacity must have the EPA-mandated marking that says:

HAZARDOUS WASTE
<p>Federal Law Prohibits Improper Disposal. If Found,</p> <p>Contact the nearest police or public safety authority</p> <p>Or the U.S. Environmental Protection Agency.</p> <p>Generator's Name and Address _____</p> <p>Generator's EPA Identification Number _____</p> <p>Manifest Tracking Number _____</p>

NOTE: Within the DOT system, this is not a "label." It is a "marking." Several companies supply adhesive-backed EPA Hazardous Waste markings which usually contain spaces for additional information that is not required by the EPA.

- 4) Placarding - prior to transporting hazardous waste or offering hazardous waste for transportation off-site, a generator must placard or offer the initial transporter the appropriate DOT placard.

3.9 Emergency Response Communication Standards

In an effort to improve the communication of emergency response information for hazardous materials transported in commerce, the DOT requires that certain information be provided and maintained by the shipper.

a. Emergency Response Information (49 CFR 172.602)

Emergency response information that can be used in the mitigation of an incident involving hazardous materials, must be maintained by carriers and facility operators who receive, store or handle hazardous materials during transportation.

At a minimum, the information must include the DOT description of the hazardous material, information on immediate hazards to health, risks of fire or explosion, immediate precautions and methods for handling spills, leaks or fires and preliminary first aid measures.

Facilities must maintain the information whenever the hazardous material is present and the information must be immediately accessible to personnel and available for use away from the package containing the material.

The information may be presented on the shipping paper or referenced to another document that contains the required information (i.e. the Emergency Response Guidebook); aboard aircraft, the International Civil Aviation Organization (ICAO) “Emergency Response Guidance for Aircraft Incidents Involving Dangerous Goods” and aboard vessels, the International Maritime Organization (IMO) “Emergency Procedures for Ships Carrying Dangerous Cargo”).

If the DOT Emergency Response Guidebook (ERG) is used as reference for the required information, use of the initials “ERG” followed by the appropriately assigned guidance number can be used to cross-reference the required information. The cross-reference citation should be placed in conjunction with the material it applies to.

b. Telephone Contact for Emergency Response Information (49 CFR 172.604)

A 24-hour emergency response telephone number is required on most shipping documents describing hazardous materials. Only “limited quantities” and specific commodities are exempt from this requirement. The telephone number must either contact a person knowledgeable of the hazards, characteristics, and mitigation information of the shipped commodity or one who has immediate access to someone who does. (Note: DOT shipping papers are not required for transportation of hazardous materials in government vehicles. However, a list of hazardous materials and the quantity being transported shall accompany the material transport. Furthermore, it is recommended that MSDSs for transported hazardous materials are available for use in case of emergency).

The emergency telephone number is to be accessible on a 24-hour basis. The number is to be placed on the shipping paper immediately following the description or, if the location. If designated by the person offering the shipment, the telephone number may be to another organization that has accepted responsibility for providing the detailed information.

3.10 Hazmat Employee Training

Each “hazmat employer” is required to train “hazmat employees” (e.g., NWS Environmental Focal Point and others) regarding safe loading, unloading, handling, storing and transporting of hazardous materials as well as emergency procedures for responding to accidents/incidents involving the transportation of hazardous materials. The purpose of the DOT requirements in 49 CFR 172.700 is to increase a hazmat employee’s awareness of safety considerations and regulatory requirements in order to reduce the occurrence of hazardous material incidents caused by human error.

To achieve this goal, there are four training requirements that apply to all modes of transportation. The four requirements are:

- a. General Awareness/Familiarization Training (i.e. HM regulations, hazard recognition)
- b. Function-Specific Training (i.e. skills, knowledge to perform job related to DOT-specified requirements or ICAO Technical instruction or IMDG-Code as applicable)
- c. Safety Training (i.e. material hazards, personal protection, handling procedures, remedial actions)
- d. Security Awareness Training (i.e. for those who affect transportation safety - an awareness of security risks associated with hazmat transport).

Section 16.6 provides details on what is required by each of these requirements.

The employer must certify that each employee received training and was tested on appropriate areas of responsibility. New employees and those who change job functions must receive training within 90-days of employment or after changing jobs. Recurrent training is required at least once every three years. A training record must be kept during the employment term plus 90-days after for each employee who completes the training.

3.11 Transportation of Specific Materials

The following section has been included to provide guidance to NWS personnel who transport or offer to contracted transporters hazardous materials and/or waste from NWS facilities and work sites. Notwithstanding the exemption provided to the Federal Government when undertaking the transportation of hazardous materials - by governmental employees, in government vehicles, for a governmental purpose - the use of the appropriate DOT shipping/marking/labeling information by NWS personnel is strongly encouraged. At a minimum, the generation of a shipping document listing the hazardous materials being carried is suggested for all hazardous material transportation.

Caution: The information provided is based on “typical” materials in use at NWS facilities and “typical” wastes generated. If the material or waste varies in any way from the descriptive discussion provided, the use of the DOT shipping name, markings, and label assigned herein may be inappropriate or illegal. Consult with the NWS Regional Environmental/Safety Coordinator or NOAA SECO for assistance.

The following terms used in the DOT information section are defined as follows:

Used - means spent, contaminated or unusable, to be discarded; a “waste.”

Unused - means “new,” not contaminated, used, spent or a waste.

Used-for disposal - means the material is used and is being sent for disposal.

Used-for recycling - means the material is used and is being sent to a recycling facility.

Waste - see “used.”

Shipping Document - the type of document required for documenting the transportation or final disposition of an item.

3.11.1 Gasoline

Gasoline may be present at NWS facilities in quantities necessary to fuel mechanical equipment used on-site or at remote work locations (i.e. lawnmower, weed-whacker, snow blower, trencher, emergency pump or small generator, chain saw, snowmobile, snow cat, boat motor, etc.). The following descriptions are applicable when gasoline is transported in containers, not when it is within the gas tanks of the previously described types of equipment.

a. Unused gasoline

Proper Shipping Name:	Gasoline
Hazard Class:	3
Identification Number:	UN 1203
Packaging Group:	II
Additional Information:	N/A
Label:	3 (Flammable Liquid)
EPA Hazardous Waste ID Number:	N/A

b. Waste Gasoline

Gasoline may become a regulated hazardous waste if it is mixed with some other commodity that would prohibit its use as a fuel (becomes contaminated). Gasoline, other than being ignitable, also contains lead (even unleaded gasoline contains lead). If mixed with oil (used or unused), it is still regulated as a hazardous waste due to its low flash point and the lead. Other hazardous materials that come to be mixed into the gasoline may require identification for purposes of disposal, not necessarily for transportation (i.e. a mix of used lacquer thinner and gasoline would be “flammable” for a transportation hazard, but EPA would require indication of its chemical components for disposal and/or treatment).

Proper Shipping Name:	Waste Gasoline
Hazard Class:	3
Identification Number:	UN 1203
Packaging Group:	II
Additional Information:	N/A
Label:	3 (Flammable liquid)
EPA Hazardous Waste ID Number:	D001 (ignitability), D008 (lead) and additional ID numbers to indicate other EPA-regulated contaminants (see Section 2 - Management of Waste)

3.11.2 Oil

Oil, including motor oils, lubricating oils, mineral oils and hydraulic oils are used in the operation and maintenance of mechanical equipment, i.e. backup diesel generator and other gasoline-powered equipment and the rain gauges, etc.

a. Unused Oil

Proper Shipping Name:	Petroleum Oil
Hazard Class:	3 (Flammable liquid category also covers combustible liquids)
Identification Number:	NA 1270
Packaging Group:	III
Additional Information:	N/A
Label:	3 (Flammable liquid)
EPA Hazardous Waste ID Number:	N/A

b. Used Oil

Used oils and waste oil mixtures identified as consisting of small quantities of gasoline and diesel fuel as well as lubricating oils, mineral oils, hydraulic oils and other similar materials are presently not regulated as hazardous wastes by EPA, but are regulated under another special set of rules. For example, waste oils must be labeled as “used oil” and sent for recycling. If they are contaminated with heavy metals or if mixed with other listed hazardous wastes, the hazardous waste rules apply. In general, waste oil, if disposed (rather than recycled), is classified as a hazardous waste if it contains Federally listed hazardous constituents or if it meets the EPA’s criteria for toxicity, ignitability, corrosivity or reactivity (see Section 2.10.1).

Some States regulate used oil as a hazardous waste and nine States regulate waste oil under their solid waste regulations. Requirements may include the manifesting of any waste oil as a hazardous waste. The proper shipping name and other DOT information required on the manifest are provided below. Questions concerning state requirements should be addressed to the NWS Regional Environmental/Safety Coordinator or NOAA SECO.

Waste oils and waste oil mixtures:

Proper Shipping Name:	Waste Petroleum oil
Hazard Class:	3
Identification Number:	NA 1270
Packaging Group:	III
Additional Information:	When applicable: insert technical names of at least two chemical components that most contribute to the hazard of the mixture.
Label:	3 (Flammable liquid)
EPA Hazardous Waste ID Number:	D001 (ignitability), D008 (lead)

3.11.3 Propylene Glycol and Ethylene Glycol Based Antifreeze

- a. Only technical food grade propylene glycol is used as an additive to rain gauge and AWPAG collection buckets in cold climates to prevent freezing of accumulated precipitation. “Unused propylene glycol” is not listed on the Department of Transportation (DOT) hazardous material table (HMT) and thus is not regulated when

transported. “Used” oil/propylene glycol/water or propylene glycol/water mixtures are also not regulated in transportation.

- b. Ethylene glycol based product (commonly known as “antifreeze”) is used in the operation of the emergency backup generators or other engine cooling systems. It is also not listed on the HMT. “Unused” ethylene glycol based antifreeze is not regulated in transportation. “Used” ethylene glycol/water mixtures similarly are not regulated in transportation.

NOTE: “Antifreeze” is listed on the HMT, but references users to classify/name it as a “flammable liquid.” Most antifreeze solutions have either a flashpoint above 200°F or no flashpoint at all. Therefore, “flammable liquid” cannot apply.

See Section 2.11.2 for a discussion regarding the proper management of propylene glycol/water/oil mixtures and/or ethylene glycol solutions.

3.11.4 Batteries

The use of batteries as a power source is a common occurrence within NWS operations. Batteries are found in the office and the Radar Data Acquisition (RDA) Emergency Power Generator Systems, in the Data Collection Platform (DCP) units at the Automated Surface Observation System (ASOS) sites, in computers, some power tools, emergency exit lighting, the Limited Access Remote Collector (LARC), flashlights, digital cameras, etc. Most of the batteries involved with the systems or equipment listed as either: lead-acid (liquid or gel cell), lithium, alkaline or nickel-cadmium rechargeable. To simplify the selection of a proper name for the batteries being transported by NWS personnel, this discussion identifies batteries as being “new” (not yet used), “used-for disposal” or “used-to be recycled.” For each scenario, the DOT information can be different.

- a. Lead- acid batteries

Table 3. Lead-acid Batteries			
	New	Used for disposal	Used, to be recycled
Proper Shipping Name	Batteries, wet, filled with acid	Waste Batteries, wet, filled with acid	Waste Batteries, wet, filled with acid
Hazard Class	8	8	8
ID Number	UN 2794	UN 2794	UN 2794
Packaging Group	III	III	III
Label	8-Corrosive	8-Corrosive	8-Corrosive
EPA ID Number	N/A	D002, D008	None
Shipping Document	Shipping Paper/Bill of Lading	HW Manifest	None*
* For universal wastes being sent for recycling, the EPA does not require the use of a tracking document. Best management practices and common sense mandate that paperwork documenting the transfer be maintained by the shipper to record this activity.			

b. Lithium Batteries

These batteries are used by the NWS as a power source for electronic and emergency equipment. The Signal Processing System (SPS) utilizes Lithium Carbon Monofluoride Batteries. Other lithium batteries may be found in computer equipment.

Table 4. Lithium Batteries			
	New	Used for disposal	Used, to be recycled
Proper Shipping Name	Lithium Battery	Waste Lithium Battery	Used Battery(ies) (Lithium)
Hazard Class	9	9	N/A
ID Number	UN 3090	UN 3090	N/A
Packaging Group	II	II	N/A
Label	9-Miscellaneous	9-Miscellaneous	N/A
EPA ID Number	N/A	D003	None
Shipping Document	Shipping Paper/Bill of Lading	HW Manifest	None*
* For universal wastes being sent for recycling, the EPA does not require the use of a tracking document. Best management practices and common sense mandate that paperwork documenting the transfer be maintained by the shipper to record this activity.			

c. Alkaline Batteries

Alkaline batteries are commonly used at NWS facilities. These batteries are found in items such as flashlights, some battery-operated smoke detectors, walkie-talkie type radios, the battery pack used in office equipment such as clocks, pencil sharpeners, and portable radios. These batteries are non-rechargeable. Alkaline batteries may be “wet” or “dry.”

Table 5. Alkaline Batteries			
If the batteries are “dry” (see MSDS)	New	Used-for disposal	Used-to be recycled
Proper Shipping Name	Batteries, dry, containing potassium hydroxide solid	Waste Batteries, dry, containing potassium hydroxide solid	Waste Batteries, dry, containing potassium hydroxide solid
Hazard Class	8	8	8
ID Number	UN 3028	UN 3028	UN 3028
Packaging Group	III	III	III
Label	8-Corrosive	8-Corrosive	8-Corrosive
EPA ID Number	N/A	None-Dry alkali materials do not meet the legal definition of a corrosive hazardous waste. Check State Regulations.	None
Shipping Document	Shipping Paper/Bill of Lading	Shipping Paper	None*

* For universal wastes being sent for recycling, the EPA does not require the use of a tracking document. Best management practices and common sense mandate that paperwork documenting the transfer be maintained by the shipper to record this activity.

Table 6. Alkaline Batteries

If the batteries are “wet” (see MSDS)	New	Used-for disposal	Used-to be recycled
Proper Shipping Name	Batteries, wet, non-spillable	Waste Batteries, wet, non-spillable	Waste Batteries, wet, non-spillable
Hazard Class	8	8	8
ID Number	UN 2800	UN 2800	UN 2800
Packaging Group	III	III	III
Label	8-Corrosive	8-Corrosive	8-Corrosive
EPA ID Number	N/A	D002	None
Shipping Document	Shipping Paper/Bill of Lading	HW Manifest	None*

* For universal wastes being sent for recycling, the EPA does not require the use of a tracking document. Best management practices and common sense mandate that paperwork documenting the transfer be maintained by the shipper to record this activity.

d. Nickel-Cadmium (NiCad) Batteries

Nickel-Cadmium Batteries are rechargeable and are used in cordless power tools, cellular/portable phones, laptop computers, camcorders, and digital cameras. These batteries contain an alkali electrolyte solution.

Table 7. NiCad Batteries

	New	Used-for disposal	Used-to be recycled
Proper Shipping Name	Batteries, wet, filled with alkali	Waste Batteries, wet, filled with alkali	Waste Batteries, wet, filled with alkali
Hazard Class	8	8	8
ID Number	UN 2795	UN 2795	UN 2795
Packaging Group	III	III	III
Label	8-Corrosive	8-Corrosive	8-Corrosive
EPA ID Number	N/A	D002, D006	None
Shipping Document	Shipping Paper/Bill of Lading	HW Manifest	None*

* For universal wastes being sent for recycling, the EPA does not require the use of a tracking document. Best management practices and common sense mandate that paperwork documenting the transfer be maintained by the shipper to record this activity.

3.11.5 Fluorescent Tubes

Used at most NWS offices and/or sites, most fluorescent tubes contain enough mercury to fail for the EPA toxicity characteristic test. Some companies have started manufacture of low mercury contact tubes, but caution is advised. Some manufacturers have overstated their product's attributes. If in doubt, contact the NOAA SECO for advice. See Section 2.9.3 for a discussion of management procedures if they are to be sent for recycling as a universal waste. Fluorescent tubes are not regulated by the DOT because they are not specifically listed on the HMT. When

shipped for disposal, however, because EPA regulates them as hazardous wastes, the DOT must regulate them as a hazardous material.

Table 8. Fluorescent Tubes			
	New	Used for disposal	Used, to be recycled
Proper Shipping Name	Fluorescent Tubes	Hazardous waste, solid, n.o.s. (Fluorescent tubes)	Fluorescent Tubes
Hazard Class	N/A	9	N/A
ID Number	N/A	NA 3077	N/A
Packaging Group	N/A	III	N/A
Label	N/A	9-Miscellaneous	N/A
EPA ID Number	N/A	D009	N/A
Shipping Document	None	HW Manifest	None*
* For universal wastes being sent for recycling, the EPA does not require the use of a tracking document. Best management practices and common sense mandate that paperwork documenting the transfer be maintained by the shipper to record this activity.			

3.11.6 Pesticides

The NWS uses pesticides to thwart the homesteading of insects on/in instrumentation and buildings. Typically, only small quantities are purchased and applied by NWS personnel. For those quantities that are not “consumed” through application or are stored so long as to be considered “out-of-date,” the pesticide is to be managed as a universal waste if recycled. Since there are few facilities that recycle these materials, the unused pesticide typically gets disposed as a hazardous waste (depending on its ingredients).

Due to the variability in the components of different products and whether they are being sent for recycling (universal waste) or for disposal as a hazardous waste, there are no “typical” pesticides. Contact your Regional Environmental/Safety Coordinator or the NOAA SECO for disposal and shipping description information for specific materials.

3.11.7 Paints

Paints, in both spray and liquid form, and related materials (such as lacquer thinner, paint remover, etc.) are found at most NWS facilities. According to DOT regulations (49 CFR 173.173), **Paint** is the proper shipping name for paint, lacquer, enamel, stain, shellac solutions, varnish, polish, liquid aluminum, liquid bronze, liquid gold, liquid wood filler and liquid lacquer base. **Paint-related material** is the proper shipping name for paint thinning, drying, reducing, or removing compound.

When selecting the appropriate description, note that not only is the end use described by the shipping name from the HMT, but also different hazard classes (3 or 8) and the degree of danger presented as either great (PG I), medium (PG II) or small (PG III). In the case of paints that are flammable liquids - class 3, the following criteria in 49 CFR 173.121 should be used to determine which PG should be assigned to the paint being transported:

Table 9. Paints		
Packaging Group (PG)	Flash Point (closed-cup)	Boiling Point

I	---	$\leq 35^{\circ}\text{C}$ (95°F)
II	$< 23^{\circ}\text{C}$ (73°F)	$> 35^{\circ}\text{C}$ (95°F)
III	$\geq 23^{\circ}\text{C}$, $\leq 60.5^{\circ}\text{C}$ ($\geq 73^{\circ}\text{F}$, $\leq 141^{\circ}\text{F}$)	---

The MSDS for the paint product should reveal the flash point and/or boiling point so that the assignment can be made.

a. Waste Code Assignment

The hazardous waste classification of paints, thinners, solvents and cleaners is dependent upon the identity of the solvent, the heavy metal content, pH and flash point and in some cases, whether or not a State has determined them to be “spent solvents.” Under most situations, paint waste and/or spent thinners do not qualify as a hazardous waste unless the flash point is less than 140°F or the mixture is found to contain a heavy metal such as chromium, lead or mercury. Because lead-based paint or latex paint with mercury-based fungicides are not produced anymore, the prevalence of lead and mercury-contaminated paint is decreasing. However, be wary when removing old paint. To ensure correct identification, a representative sample should be taken and submitted to a qualified lab for analysis. Consult with the NWS Environmental/Safety Coordinator and/or NOAA SECO to determine if the item is regulated.

Some paints might (in rare cases) also warrant consideration due to a very high or low pH and for this reason would be classified as a hazardous waste due to corrosivity (EPA Waste Code D002).

The potential EPA Hazardous Waste Numbers/Characteristic for spent thinners and paint waste are:

D001 - ignitability

D002 – corrosivity

D007 - toxicity - chromium

D008 - toxicity – lead

D009 - toxicity - mercury

F002 - (spent methylene chloride, trichloroethylene, 1,1,1-trichloroethane)

F003 - (spent xylene, acetone, etc.)

F005 - (spent toluene, methyl ethyl ketone, etc.)

See Section 2 - Management of Waste for a detailed discussion of determining the assignment of hazardous waste identification numbers.

Consult with the NWS Regional Environmental/Safety Coordinator and/or NOAA SECO to determine applicable requirements.

Table 10. Paint		
	New	
Proper Shipping Name	Paint, or Paint-related material	Paint, or Paint-related material
Hazard Class	3	8
ID Number	UN 1263	UN 3066
Packaging Group	I or II or III	II or III
Label	3 Flammable Liquid	8-Corrosive
EPA ID Number	None	None
Shipping Document	Shipping Paper/Bill of Lading	Shipping Paper/Bill of Lading
Table 11. Paint		
	Used-for Disposal	
Proper Shipping Name	Waste Paint, or Waste Paint-related material	Waste Paint, or Waste Paint-related material
Hazard Class	3-Flammable Liquid	8-Corrosive
ID Number	UN 1263	UN 3066
Packaging Group	I or II or III	II or III
Label	3-Flammable Liquid	8-Corrosive
EPA ID Number	All that apply as per 6.11.7.a.	All that apply as per 6.11.7.a.
Shipping Document	HW Manifest	HW Manifest

b. Used-to be recycled

DOT descriptive information is the same as for a shipment of “waste” paint or paint-related material. Although paints may have an opportunity to be recycled in some areas of the country, they have not been designated as a universal waste and thus when recycled, all regulated hazardous constituents must be identified when they are being sent for disposal.

3.11.8 Cleaners and Degreasers

While the NWS uses many different cleaning products, it is the select group of “solvent-based” cleaners that are addressed here. Examples include magnetic tape head cleaner (contains xylene, ethane, benzene) and paint stripper (xylene, hexane, naphtha). An investigation into the components in the product is the key to proper identification. In this group, there are many possible DOT descriptions and only samplings of the potential descriptions are included here.

Under the heading of “New,” the product being shipped is best described using its “name” as shown on the product label. When the product is “used and to be sent for recycling,” the DOT description will be the same as the hazardous waste description provided below under the heading “Used-for Disposal.” Solvents destined for recycling are not exempted as universal wastes and all regulated hazardous constituents must be identified as if being sent for disposal.

a. Used-for Disposal

According to DOT regulations, a liquid with a flash point at or below 141°F is classified as a flammable liquid and a liquid with a flash point above 141°F and below 200°F is classified as a combustible liquid.

- 1) A mixture of spent non-halogenated solvents containing more than one of the following: Xylene, Acetone, Ethyl ether, methyl isobutyl ketone, cyclohexanone, methanol, cresols, nitrobenzene, MEK, Toluene, Carbon disulfide, Isobutanol, etc. may be shipped using the following information:

Table 12. Cleaners and Degreasers Used for Disposal	
Proper Shipping Name:	"Waste Flammable liquid, n.o.s."
Hazard Class:	3
Identification Number:	UN 1993
Packaging Group:	I, II or III (see 6.11.7 for PG selection criteria in hazard class 3)
Additional Information:	(Insert technical names of at least two components that most contribute to the hazard of the mixture in parentheses after the "n.o.s.")
Label:	FLAMMABLE LIQUID
EPA Hazardous Waste ID No.:	F003, F004, F005 (depending on chemicals) See Attachment 2 to Section 2 - Management of Waste for listings of hazardous waste numbers.

- 2) Any of the previously listed non-halogenated solvents if kept segregated (not mixed) would require the specific name as found on the HMT. Information for MEK is provided as an example.

Table 13. Example of Cleaner and Degreasers: MEK	
Proper Shipping Name:	(as found in Column 2 of HMT) Example: "Waste Methyl ethyl ketone"
Hazard Class:	(as found in Column 3 of HMT) Example: 3
Identification Number:	(as found in Column 4 of HMT) Example: UN 1193
Packaging Group:	(as found in Column 5 of HMT) Example: II
Additional Information:	N/A
Label:	(as found in Column 6 of HMT) Example: FLAMMABLE LIQUID
EPA Hazardous Waste ID No.:	(as listed in Attachment 2 to Section 2 -Management of Waste) Example: F005 (if spent), U159 (if unused or excess material)

- 3) While solvents and cleaners containing halogenated solvents have been replaced by other less toxic chemicals, some NWS facilities and work sites may still have old stock that will require disposal. The following information is required for disposal of halogenated solvent wastes if kept segregated including Perchloroethylene, Trichloroethylene, Trichloroethane and Methylene chloride. Information for 1,1,1-Trichloroethane is provided as an example.

Table 14. Example of Cleaner and Degreasers: Trichloroethane	
Proper Shipping Name:	(as found in Column 2 of HMT) Example: "Waste 1,1,1-Trichloroethane"
Hazard Class:	(as found in Column 3 of HMT) Example: 6.1
Identification Number:	(as found in Column 4 of HMT) Example: UN 2831
Packaging Group:	(as found in Column 5 of HMT) Example: III
Additional Information:	N/A
Label:	(as found in Column 6 of HMT) Example: 6.1-POISON
EPA Hazardous Waste ID No.:	(as listed in Attachment 2 to Section 2 -Management of Waste) Example: F001 (if used in degreasing), U226 (if unused or excess material), F002 (if used for other than degreasing)

For Freon (chlorofluorocarbon solvents and mixtures):

Table 15. Example of Cleaner and Degreasers: Freon	
Proper Shipping Name:	"Hazardous waste, liquid, n.o.s."
Hazard Class:	9
Identification Number:	NA 3082
Packaging Group:	III
Additional Information:	contains Freon
Label:	9-MISCELLANEOUS
EPA Hazardous Waste ID No.:	(as listed in Attachment 2 to Section 2 -Management of Waste) Example: F001

3.11.9 Mercury and Mercury-Containing Equipment (MCE)

While the NWS has reduced or eliminated the use of thermometers, barometers, sling psychrometers and thermometers that contain elemental mercury, these devices may still be used or stored or in a historic display. Additionally, facilities use mercury switches to control the operation of certain HVAC and electrical equipment. The EPA has termed many items as "Mercury-Containing Equipment (MCE)" and has chosen to regulate them under the Universal Waste Rule (waste that is recyclable).

Mercury-containing equipment is in hundreds of devices at levels ranging from less than a gram up to several pounds. Some of the various types of MCE that can be used at a NWS facility are:

- High Intensity Discharge Lamps
- Mercury Containing Switches – furnace controls, HVAC controls, laboratory equipment and industrial equipment
- Mercury Thermostats
- Silent Wall Switches (Prior to 1991)
- Freezer and Flame Sensors gas fired devices and pilot lights.
- Manometers/Barometers/Thermometers.

- Float Switches - sump pumps and septic tanks
- Mercury regulators

Each field office should assess the facility and equipment to determine if they are likely to contain mercury. While the use of fluorescent tubes and mercury-containing switches and other equipment is usually easy to determine, the use of other MCE at the facility may require some investigative effort. If MCE is used at the facility, see Section 2.10.4 for MCE management.

If these devices are discarded, they are classified as hazardous waste due to the mercury content and must be sent to a permitted hazardous waste facility for treatment, disposal, or recycling.

Prior to disposal, it is necessary to check with the NWS Regional Environmental/Safety Coordinator and/or the NOAA SECO to determine if the State has adopted the Universal Waste rule and if there are any State-specific requirements.

- b. Mercury Waste and Waste Mercury Containing Equipment (MCE) being disposed:

Table 16. Mercury Waste and Waste MCE disposed	
Proper Shipping Name:	Waste Mercury
Hazard Class:	8
Identification Number:	UN 2809
Packaging Group:	II
Additional Information:	N/A
Label:	8 (corrosive)
EPA Hazardous Waste ID No.:	U151
Shipping Document	Manifest

- c. Mercury and Mercury Containing Equipment (MCE) shipped for recycling:

Table 17. Mercury Waste and Waste MCE recycled	
Proper Shipping Name:	Mercury contained in manufactured articles
Hazard Class:	8
Identification Number:	UN 2809
Packaging Group:	III
Additional Information:	8 (corrosive)
Label:	N/A
EPA Hazardous Waste ID No.:	Shipping Paper - mercury is regulated by DOT as a HM.
Shipping Document	Mercury contained in manufactured articles

In addition to the assignment of a DOT shipping description, the EPA requires that each MCE or container of devices should be marked with one of the following phrases:

- Universal Waste – Mercury Containing Equipment
- Waste - Mercury Containing Equipment
- Used Mercury Thermostats
- Waste Mercury Thermostats
- Universal waste – Mercury thermostats

3.12 Responsibilities

3.12.1 NWS Headquarters (NWSH)

- a. The NWSH Environmental/Safety Office will provide assistance to Regional Headquarters, Operating Units, and field personnel to ensure that NWS facilities comply with this section.
- b. NWSH will coordinate with NOAA SECO, as necessary, regarding compliance issues related to this section.

3.12.2 Regional or Operating Unit Environmental/Safety Coordinator

- a. Will monitor and promote compliance with the requirements of this section at field offices or Operating Unit facilities.
- b. Will assist, as necessary, field offices or operating unit facilities with selection of hazardous materials/waste transportation service providers and identification of training opportunities, to ensure compliance with this section.

3.12.3 Station Manager

- a. Will have oversight over the implementation of this section and ensure that the requirements of this section are followed by individuals at the NWS facility.
- b. Will ensure sufficient personnel and funding are available to enable compliance with all applicable requirements of this section.
- c. Will ensure that procedures are implemented at NWS field offices for proper labeling, marking, and identification of all hazardous materials/hazardous waste transported by NWS personnel and contracted service providers.
- d. Will ensure NWS employees follow the requirements of this section.
- e. Will review or delegate review of this section on an annual basis to ensure that the facility is complying with its requirements. Confirmation of this review will be forwarded to the Regional or Operating Unit Environmental/Safety Coordinator.

3.12.4 Environmental or Environmental/Safety Focal Point or Designated Person

- a. Will ensure any tasks delegated to them by the Station Manager are implemented in accordance with the requirements of this section.
- b. Will determine status of hazardous material/hazardous waste transportation activities at NWS facilities and work sites.
- c. Will maintain required paperwork and records.

3.12.5 Employees

- a. Individual employees affected by this section are required to read, understand, and comply with the requirements of this section.
- b. Report all violations of the requirements of this section to their supervisor or Environmental Focal Point.

3.13 References

Incorporated References

The following list of references is incorporated as a whole or in part into this section. These references can provide additional explanation or guidance for the implementation of this section.

3.13.1 Research and Special Programs Administration, Department of Transportation

49 CFR Subchapter C		Hazardous Material Regulations
	Part 171	General information, regulations and definitions
	Part 172	Hazardous Material Tables (HMT), Special Provisions, Hazardous Materials Communications, Emergency Response Information and Training
	.101	Purpose and Use of Hazardous Material Table
	.200-205	Shipping Papers
	.300-338	Marking
	.400-450	Labeling
	.500-560	Placarding
	.600-606	Emergency Response Information
	.700-704	Training

3.13.2 Environmental Protection Agency

CFR Subchapter I Solid Wastes		
	Part 261	Identification and Listing of Hazardous Waste
	Part 262	Standards Applicable to Generators of Hazardous Waste
	.20-23	The Manifest
	.30-34	Pre-Transport Requirements
	.40-44	Recordkeeping and Reporting

3.13.3 Emergency Response Guidebook

Developed jointly by Transport Canada, U.S. Department of Transportation and the Secretariat of Transport and Communications of Mexico.